Industry Canada

Financial Strategies and Resources to Support Online Learning

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Executive summary

This discussion paper explores a number of different strategies for funding and supporting online learning. It is based on studies of best practice in online learning, experience of the author in developing online programs both for credit and non-credit, and on research into the costs and benefits of online learning.

Different forms of post-secondary education are defined, because the relvance of different funding strategies will vary according to the form of post-secondary education.

Current strategies for funding online learning in Canadian post-secondary institutions are discussed. These include:

- using existing resources
- innovation grants
- re-mandating existing media production/distance education units
- re-organizing existing support units.

These strategies are then compared with the requirements for successful online learning. As a result, current funding strategies are generally considered inadequate to support a high quality, sustainable approach to online learning.

A range of alternative funding strategies are then explored, in the form of arguments for and against. Readers are encouraged to add their own arguments. The strategies explored are as follows:

<u>For credit programs:</u>

- project management
- audit of previous and future technology spending
- student technology fees
- re-allocation of existing resources
- increasing enrolments
- increased baseline funding (goveernment grant and/or tuition fees)

<u>For cost-recoverable programs</u>

- loans from existing institutional resources
- establishing a for-profit company
- outsourcing

Finally, there is a brief discussion of the pros and cons of partnership and consortia.

The paper concludes with a brief discussion of some of the key issues, and reinforces the need for specific funding strategies for online learning, better methods of costing

and more research into the costs of both online and face-to-face teaching, and the risks inherent in for-profit operations.

Introduction

There are major educational and economic benefits that can be achieved through online learning. For instance, from research based on six case studies of online learning at Canadian post-secondary education institutions, Bartolic and Bates (1999) identified the following benefits:

- widening access and opening up new markets,
- recovering costs/generating profit,
- internationalizing the curriculum,
- development of collaborative learning skills,
- more student time on task,
- improved writing skills.

However, there is now clear evidence that these benefits cannot be achieved without some major re-structuring of the way programs are managed and financed. Bates (2000) found that teaching staff are often not adequately trained in the use of the technology for online learning, and also are often unaware of the importance of project management, instructional design and media production skills for the development of high quality online courses. More importantly, teaching is often poorly done after the Web site is designed, in terms of managing online discussions and assignments, and students are often inadequately supported or faculty overwhelmed with student communications. Institutions do not provide faculty with sufficient technical, media production or instructional design support or training in online learning, and as a result faculty often complain of the extra work load that results.

Many of these problems are due to inadequate funding or financial strategies for online learning, resulting in programs being unsustainable or under-resourced and hence of poor quality.

The purpose of this work proposal is to suggest a range of possible funding strategies and resources that could be used to facilitate the development of high quality and cost-effective online learning.

Definitions

Online learning

Online learning comes in many forms, but can be grouped into three main clusters, allthough these should be seen more as points on a continuum rather than discrete categories.

Supplementing classroom teaching

This can range from the use of e-mail between student and teacher, to the use of listserves or Web discussion forums for communications between students, to the use of the Web to provide lecture notes, reading references, and access to other sources of information related to the course.

While this is probably by far the most common use of the Internet for teaching in higher education, this supplemental use of the technology is not the main focus of this report.

Distributed learning

Distributed learning in this report is defined as a deliberate mix of face-to-face teaching and online learning, where online learning reduces but does not eliminate face-to-face teaching (for instance one lecture or seminar a week, with the rest done online, or where students mix a summer institute with online study). This use of online learning is part of the focus of this report.

Distance education

Distance education is defined as a course or program where the great majority of the teaching and learning is conducted without teacher or students meeting each other. Online learning is one means by which distance education can be delivered. In a distance edeucation context, online learning may often be supplemented by other technologies, such as print or video-conferencing. This use of online learning is also part of the focus of this report.

It is important to be clear about what form of online learning is being discussed, as this affects the relevance of different approaches to funding.

Credit or non-credit programs

Credit programs refer to academic programs leading towards a diploma, degree or other qualification where the course of study receives a government subsidy, and/or where student tuition fees are controlled or regulated by government.

Non-credit programs are certificates, diplomas or short courses for which no government subsidy is available, and where the institution has freedom to set the level of tuition.

Again, we need to look differently at funding strategies for these two areas of higher education.

Public education institutions and private sector organizations

The issue here is regulation. Public sector organizations are regulated by government. This can impact on their financial strategies - for instance, they may not be allowed by government to invest, borrow money, or carry forward funds from

one year to the next. Private sector organizations have greater financial freedom, although the discipline of the market provides its own limits.

Any discussion of funding strategies for online learning needs to bear these differences in mind.

Current support systems for online learning

In this section, the most common models of supporting online learning in public sector higher education institutions will be analyzed and discussed.

Lone Rangers

The Lone Ranger is the individual teacher, working alone or at best with a graduate student, to create his or her own on line course materials, with little or no additional financial or technical support from the institution as a whole. Some institutions provide small grants to individual teachers through a competitive bidding process. Many Lone Rangers though have no financial support, and develop online teaching through their own enthusiasm and initiative.

Pros	*Cons*
• the way most instructors get started in online learning	• poor graphics design; poor navigation; • add-on to existing face to face teaching; • no strategic use of the technology
• enables large numbers of teachers to develop online courses • faculty autonomy preserved	• steep learning curve; much work and many mistakes • multiple platforms/approaches • no sharing of materials
• encourages innovation and diversity • winners 'emerge'	• does not guarantee innovation; may merely repeat what others have done • innovation may not be institutionalized or scalable
• trains graduate students in online learning techniques	• training by trial and error does not guarantee good pedagogic/design principles; • rough on learners

• no immediate cost to institution	• adds to teacher's workload; • may replace more important work, such as research
• others:	others:

This is probably the most common funding strategy in most Canadian higher education institutions.

Media production units

Funds are allocated either to a central media production units or to Faculty units. These units may have started as photographic, television, or video-conferencing production centres and may have the potential to 'grow' into production units supporting online learning. They will have specialized production staff, such as video producers and technical support staff, and may have acquired digital production skills.

Pros	*Cons*
• builds on existing skills and resources	• different production methods needed for online learning (fast, flexible, low-cost) • different production styles (TV vs computing) • may not have instructional design skills
• funds already available	• funds committed to other services (TV; video-conferencing); • need additional funding/new mandate/skills to work on online courses;
• may be self-financing	• often operate on a cost-recoverable basis but fee for service limits academic use (no budget) • external contracts may have priority

• provides professional look to materials	• can 'over-produce' for online learning
• others:	• too far removed from 'front-line'; • deans do not like central units
	• others:

Distance education units

These units may have started as print-based correspondence units and have recently moved into online learning, but only for off-campus students. They will usually include instructional designers or course developers who work with individual professors to develop distance teaching materials. Funds may be for historical reasons provided centrally, or the unit may depend on individual contracts from Faculties. They will likely have a strong student support system in place (arrangements for paying tutors, handling assignments, student advising) geared to supporting off-campus students.

Distance education units may not have a mandate or resources to support online learning for campus students. Nevertheless, such central units may have specialist skills that with a new mandate, adequate funding, and some re-organization could provide support for online learning, for students both on and off campus.

Current funding models for online learning

Use existing resources

Many Canadian post-secondary institutions frankly provide nothing in the way of earmarked resources for online learning. Any developments have to be found from regular or past funding arrangements.

Pros	*Cons*
• enables Deans/faculty to make priority decisions about teaching methods	• online learning needs front-end development costs over and above faculty time (Web server, Web programming, copyright clearance, instructional design)

• ensures existing resources are fully utilized	• no room for manouevre, unless current resources are being used ineffectively/ spare capacity
• avoids difficult re-allocation issues	• avoids making strategic decisions about teaching and learning
• may not be any other resources available	• may reduce institution's competitiveness/credibility with students
• others:	• others:

The problem with this strategy is that it fails to recognize that online learning needs a different financial structure from face-to-face teaching. Online learning has higher front-end costs and, if well designed, lower delivery costs than face-to-face teaching. There are other costs besides those of salaries for teachers. There are both capital and human investment costs required to provide a quality service, and this is usually almost impossible to do without some new or re-allocated funds.

Institutions may legitimately not allocate funds for online learning because they believe that it is not strategically important to move in this direction. However, any institution wishing to develop online learning needs to ensure that adequate resources are available to start up and maintain operations, and this cannot be done by using the same funding model as for face-to-face teaching.

Innovation grants

These are short-term, usually one year grants, to encourage innovation and to get institutions or departments moving into online learning.

The most common form of innovation grant comes from provincial and federal governments. Alberta and British Columbia for instance have held back a small proportion of operating grants from institutions for innovation or learning technology applications. Alberta and Industry Canada make collaboration betweeen institutions or at least applications from more than one institution a minimal requirement for funding. The Federal Office of Learning Technologies also has funds to support the use of learning technologies.

However, many institutions are now also holding back their own central funds for applications for innovative teaching. For instance, UBC allocates $2.2 million annually through its Teaching and Learning Enhanncement Fund.

Pros	*Cons*
• gets faculty and institutions started on online learning	• does not encourage sustainability; successful projects need to find renewed funding • essential support staff hired on short-term funding and leave when funding ceases; experience and expertise lost
• provides earmarked resources; can't be used for anything else	• sidelines innovation; leaves rest of the institution untouched; no transfer because project had special funding
• does not directly interfere with traditional teaching	• avoids making strategic decisions about teaching and learning • government funding may interfere with university's strategic directions for online learning (faculty going for external grants rather than committing to university priorities)
• may not be any other resources available	• avoids tough decisions within an institution about re-allocation and teaching priorities • proposal preparation a lot of work for relatively little money

	• after five years, merely putting a course online is not innovative
	• government and institutional committees do not usually have expertise to pick winners; allocation for political (fairness) rather than educational (effectiveness) reasons
• others:	• others:

Earmarked government and institutional short-term grant funding has been a valuable start-up strategy, enabling many institutions to experiment with online learning for the first time. However, for many institutions it is now time to move beyond experimentation into sustainable activity, and this requires a different funding approach.

Re-organization of existing units

Another strategy is to pull together existing units under a new mandate which may include supporting online learning. Thus a Faculty Development Office, Media Production Centre and a Distance Education Centre may be pulled together to create a Centre for Teaching and Learning (as at the University of Waterloo) or a Learning Commons (as at the University of Calgary). These may provide support to both faculty and students. The Universities of Alberta and Calgary both have funds facilitating secondment to such centres for faculty wishing to develop technology-based programming.

Pros	*Cons*
• requires no new or major institutional investment	• if online learning is to be a new activity, previous activities may need to be reduced or abandoned without additional funding
• may generate sponsorship from private sector/new government funding	• sponsorship likely to be for equipment/facilities, not ongoing costs of teaching online

• builds on existing expertise/resources	• may not be existing expertise in online learning • can be disruptive to existing staff; office politics/empire building

• creates central focus for online teaching	• does not guarantee faculty co-operation • deans may oppose large central unit that takes away resources from Faculties • too far removed from front-line
• others:	• others:

The limitation of this approach is that while it may be necessary, it may not be sufficient. If these areas have been providing a good service before re-organization, they may not be able to cope, even after re-organization, with a major expansion in online learning without additional funding. This may have the appearance of bold action, but may not make much difference in terms of actual outcomes.

Critical requirements for online learning

Before looking to alternatives to these current methods of funding, it is important to specify some of the critical requirements for high quality online learning (a full discussion of these issues can be found in Bates, 2000). Any funding strategy will need to address these requirements.

Vision and leadership

There has to be a clear and shared vision at all levels within an institution about the role, potential, and limitations of online learning.

Infrastructure and technical support systems for online learning

To avoid faculty overload and burn-out, and to ensure high quality online programs, there has to be adequate technical infrastructure, and technical, production and instructional support staff. Bates (2000) estimates that a minimum of 5% of the total teaching budget is required for the support staff alone. Decisions will need to be made about the balance between central and decentralized funding for these support systems.

Faculty development and training

Online learning requires faculty to be not only familiar with the technology, but also to redesign their teaching. Most university and college instructors do not have the necessary pedagogic or instructional design background to teach online effectively from the beginning.

Student access requirements

A strategy will be required to ensure that students have adequate computer and network access for online programs

Ability to cost accurately online and face-to-face teaching

Because there are costs both in production and delivery of online learning, and because there are major cost differences in the requirements of different subject areas and different teaching methods, there needs to be a costing methodology and accounting system in place that allows the costs of online courses to be estimated accurately and tracked.

Faculty reward and control of workload

In order to bring about quite radical changes in the way that teachers teach, there has to be reward for high quality teaching and innovation, and the changes must be implemented in ways that do not lead to excessive increases in workload either to teachers or to students.

Alternative funding strategies: government subsidized programs

Project management

Project management is used extensively in other creative multimedia areas, such as film-making, advertising, video and computer games, and also in many engineering and technology-based projects. A project can be a full program of courses, an individual course, a research study, or a small module, such as a CD-ROM or Web site, located within a larger unit of teaching such as a face-to-face course. Face-to-face courses could be considered projects alongside distributed learning or distance education courses.

A project has a defined set of resources, usually determined at the outset of the project, a clear "deliverable", in that it is clear what the project has to achieve (in this case an online course), and it is obvious when it is completed (a deadline). A project will be completed by a team of people covering a range of skills, such as subject expert, instructional designer, Web programmer, etc.

Resources can include cash, allocation of staff time, and access to facilities (e.g. so many hours of CD-ROM burner time), or these may all be converted to cash values.

Pros	*Cons*
• funds earmarked for online learning	• requires strategic re-allocation of resources • appears more expensive than Lone Ranger model • difficult to predict costs/time in advance

• controls budget and faculty workload • sets a boundary round a project • provides clear job definition/time commitment • maintenance costs built in	• faculty and academic departments unused to working this way; major cultural change • requires training in project management • requires discipline (meeting deadlines, keeping to own task)
• produces higher quality courses, due to use of specialist staff • quality control	• faculty have to work in team with other professionals
• reduces faculty time on task	• reduces autonomy of faculty
	• difficult to apply in 'mixed' model of classroom + online • overkill where online activities supplement to classroom teaching
• enables efficient management of staff	• managerial approach to teaching
• others:	• others:

Project management is easier to apply when courses are delivered wholly online, rather than in a mixed distributed learning mode. Project management also requires a major shift in organizational culture. However, it is a critical technique for controlling costs and faculty workload.

Audit of previous technology spending

Given that investment in infrastructure and administrative information technology systems tends to precede investment in educational applications, an audit of relative spending in these three areas, past and planned, may provide opportunities for re-allocation of future resources. For instance, it may be time to slow down investment in further improvements to the technology infrastructure or administrative systems, and re-allocate at least some of the resources historically devoted to these other areas to suppport educational applications.

Pros	*Cons*

• limits need for increased funding overall	• may interfere with other Vice-President's plans

• provides a balanced funding strategy for all technology investment	• will require transfer of funds between major divisions • may cause internal friction at senior management level
• frees up additional and regular funding for academic applications of technology, without taking funds away from other academic activities	• may cause problems down the road for technology infrastructure and adminstrative applications • requires clear academic plan for use of learning technologies
• others:	• others:

The main disadvantage of this strategy is that it is highly political, and can be seen as robbing Peter to pay Paul. However, in many institutions there is a heavy historical allocation of strategic funding in favour of infrastructure and administrative applications of technology, compared with investment in the academic use of technology.

Student technology fees

Some institutions are now passing some of the costs of technology investment directly on to the students by means of an additional student technology fee. The fee is used to provide technical help and support for students, to improve the local area network, to provide docking ports for portables, and to make available easy access to public computers in public places on campus. In some cases it supports the purchase or leasing of laptop computers for students. The introduction of this fee may be dependent on a student vote in some jurisdictions.

Pros	*Cons*
• provides additional source of revenue earmarked to support technology-based teaching • provides new funding for new activities	• some governments may reject this as a backdoor way to increase tuition • funds will cover only technical not instructional aspects of online learning • on its own will not be sufficient to cover costs of teaching with technology
• identifies student support for	• why additional fee for technology,

technology-based teaching • easier to justify to students than general fee increase	when other core activities such as access to lecture theatres are not charged for? • students may vote against it

• requires clearly defined value-added benefits from online learning	• requires clearly defined value-added benefits from online learning

While revenue from student technology fees may be a useful source of additional income to cover new activities, it is not sufficient in itself and also may result in negative reactions from students and/or government.

Re-allocation of existing resources

The institution makes a decision to re-allocate funds from other sources to support online learning initiatives. It may do this in any one or more of the following ways:

- not replacing retiring teachers,
- closing or integrating small departments or obsolete programs,
- creating a special fund for online projects which can be accessed on a competitive basis (funding may be tied to a requirement for a project management model to be followed),
- the online learning fund may be created by cutting the resource allocation to Faculties,
- department heads may require or encourage individual teachers to reduce face-to-face teaching to free up time for online teaching.

Pros	*Cons*
• sends clear message as to institution's priority for/commitment to online learning	• may result in hostile reaction from faculty not committed to online learning
• will probably force major re-thinking of all teaching in the institution, including new role for face-to-face teaching and use of campus	• top down approaches do not work in universities or many colleges
• will ensure sustainable and earmarked resources for online learning	• will need major investment in faculty development and training • deans will oppose centralization of resources
• will result in major changes in teaching and learning	• difficult to fine tune appropriate balance between face-to-face and

	online learning
• others:	• others:

If online learning is to be an important part of an institution's teaching and learning environment, then the institution has to build it in to its base operating budget. The willingness to re-allocate funds is a necessary strategy if online learning is to become a core part of a university or college's operation. Re-allocation is also a measure of the level of commitment to the concept by different organizational units. Eventually, funding re-allocation will need to be pushed down to the faculty or even departmental level.

Institutions though that decide to re-allocate will face some very difficult decisions in a "zero balance" or declining budget context.

Increasing enrolments

For those institutions where government funding is related to the number of full-time equivalent students taught (FTEs), online learning could lead to an increase in enrolments by reaching out to students beyond the geographical locality of the university or college, or by attracting those in full-time employment or with young families. With those enrolments may come an increase in funding, both from government grant and student tuition fees.

Pros	*Cons*
• opens up new markets which pay for themselves	• still needs start-up costs before funds come in; high risk • government may set a limit on the number of FTEs it is willing to fund
• meets needs of lifelong learning market	• faculty may not be interested in this market
• others:	• others:

Increased baseline funding

If the aim of using online learning is to improve the quality of learning and to prepare students better for a knowledge-based society, rather than to save money,

then it could be argued that governments have a responsibility to face up to the additional costs that are necessary to support online learning.

There are two ways in which baseline budgets could be increased:

Increased government grant

Government may agree to increase baseline budget by a small margin (1-2%) for those institutions that can show a clear plan for the development of online learning, and the associated additional costs that this would require.

Pros	*Cons*
• will actively encourage the move to online learning	• governments tend to want to reduce rather than increase spending on higher education • government may be reluctant to increase base funding for a specific activity
• avoids difficult re-allocation decisions	• takes pressure off institutions to re-think their teaching/make tough re-allocation decisions
• reflects true costs of operation	• assumes that cost of online learning is higher than face-to-face teaching (probably not true if indirect costs are also considered) • government increase may not cover full cost
• others:	• others:

Increased student tuition fees

Governments may not be willing to increase baseline funding but may agree to increase in fees to cover costs of online teaching. The same pros and cons will apply as for student technology fees.

Increased base funding, whether from government grant or student fees, is more likely to happen for credit programming if:

- an institution has a clear plan and rationale for online learning
- the extra costs and benefiits of online learning can be clearly identified
- an institution has made some difficult re-allocation decisions or has found some additional resources of its own to support online learning
- there is evidence of student, parent and employer support for online learning.

Alternative funding strategies: cost-recoverable programs

There is more scope for new funding strategies for cost-recoverable or profit-generating online programs. For non-credit programming, institutions are free to charge what the market will bear with regard to student fees. Hence it is easier to apply a straight business plan model in these areas, enabling revenues and expenditures to be directly related.

Start-up funding

The major barrier to operating cost-recoverable programs is finding the start-up funding. Sums of $50,000 upwards are required to develop programs before any revenues can be generated, and even institutions with dedicated online learning units may have difficulties getting programs going without start-up funding.

There are several ways of finding start-up money, all of which mean investing unused or 'soft' money:

Re-allocate unused funds

Funds may have been allocated for projects, or set aside for major investments, and will be used in the future, but because of difficulties in finding faculty to work on a project, or contractual difficulties, etc., these funds sit in an account unused.

A large university is likely to have quite a large amount of money allocated to projects but unspent, or carried forward from one year to another (colleges tend to have less flexibility). Often this money is invested in short term bonds then cashed when needed.

These 'soft' funds can be allocated to the start-up of a cost-recoverable project which is then paid back, with interest at market or below market rates, when the students pay their fees.

Pros	*Cons*
• opens up new markets which pay for themselves • ensures profits are returned to the institution • reduces dependency on external financial agencies (banks, venture capital)	• start-up costs before funds come in; hence some risk • only works for programs where clients can pay full cost • deans/management may not be willing to take financial risk • competition may keep margins tight
• requires strong business plan	• requires strong business plan • needs excelient market research/

	intelligence/marketing
• meets needs of lifelong learning market	• faculty may not be interested in this market • institutional administrative procedures (registration/accounting) may not be set up to serve this market
• enables hiring of additional instructors	• revenue sharing agreements necessary (instructors/departments/institution)

• uses institutional money for educational rather than investment purposes	• government accounting regulations may restrict flexibility to invest • programs may need more money than is available • need to track revenues/costs/ repayments very carefully
• others:	• others:

This model can operate within the regular operation of a university or college. This model is unlikely to work though without investing in additional instructors or tenured faculty to support such an initiative, and there may be a need to renegotiate government regulations regarding investment and use of allocated funds.

Establishing a for-profit company

Start-up and initial operating funds may be obtained by borrowing money at market rates. This may be from banks or other financial institutions or through partnership with a venture capital company. In order to do this, a government regulated or subsidized institution will probably have to set up a separate for-profit company, to limit the risk to the institution, and to avoid breaking government financial regulations.

Pros	*Cons*
• draws in new and possibly unlimited sources of funding • brings in entrepreneurs who understand business • no or less institutional money required	• new organization needed • additional overheads (CEO, CFO, etc.) • loss of institution's autonomy; financial partners will have major say • making money may be more important than serving educational needs
• opens up new markets which pay for themselves • meets needs of lifelong learning market	• only works for programs where clients can pay full cost • competition may keep margins tight • innovation separated from main institution

• requires strong business plan	• requires strong business plan • needs excellent market research/ intelligence/marketing • what happens to profits? revenue sharing agreements with academic departments? • what are obligations on university/ college if venture fails?
• enables hiring of additional instructors	• faculties will not directly benefit from such an operation • instructors may have different qualifications/status than main university/college faculty • student accreditation may be seen as different/inferior from those of main institution
	• if successful, government may reduce funding for main institution
• others:	• others:

Outsourcing

There are a number of companies that will develop online learning programs for an institution on contract. Institutions are charged a flat rate per student (usually around US$100 per student per course offering).

Pros	*Cons*
• provides expertise in online design	• outsources expertise; no direct learning about online design • online delivery costs (marking, discusssion forums, student administration) not included in most contracts

• avoids overheads of an internal unit	• margin between student fee in Canada and cost per student of the contract means insitution has to cover additional costs • for a large number of courses, internal development and delivery likely to be more economical
• limits funding to contract period	• separates online learning from rest of teaching
• others:	• others:

Outsourcing may work for institutions wanting to try out online learning for the first time, or wishing to pilot online learning. However, the more integrated online learning becomes with regular teaching, and the larger the range of activities, the more sense it makes to develop in-house capability. Also, in the Canadian market, where student fees are controlled by government, outsourcing ends up as an additional cost to institutions.

Partnership, collaboration and consortia

Partnership

A partnership here is defined as an arrangement between two organizations to share the costs of development and delivery of online courses. The two organizations may be two universities, or a university and a private sector partner such as a publisher.

Consortia

A consortium involves more than two institutions in a collaborative arrangement. This may range merely from a common listing of courses on a single Web site, through to credit transfer being available between institutions for designated courses, to a full degree program being developed collaboratively.

Pros	*Cons*
• development costs of a program can be shared between institutions	• need to find partner with similar needs but complementary skills/subject expertise

• allows for local accreditation	• student fees may differ between institutions

• widens market reach	• technology access may vary between institutions • works best between institutions of equal standing
• internationalizes curriculum if partners from other countries	• credit transfer between institutions may be difficult
• each institution retains autonomy over programs it will accept from other institutions	• may work better at departmental rather than institutional level
	• language and cultural differences, especially approaches to learning • student advising, central information points, and credit transfer arrangements involve additional costs
• others:	• others:

Key issues and conclusions

Most undergraduate college and university credit programs in Canada are heavily subsidized by government grant, in order to keep down the cost of tuition to students. The grant funding in most jurisdictions is based on an average cost per full time student equivalent (FTE). Some jurisdictions cap or limit the number of FTEs that will be funded. Although the FTE weighting may vary across categories of subject area, the funding per FTE is loosely related to the costs of face-to-face teaching.

This has several consequences for online learning. First of all the cost structures of online learning are different from those for face-to-face teaching. For instance while face-to-face costs increase in a linear fashion within fixed instructor/student ratios, online learning tends to have higher start-up costs but lower marginal cost per student. This makes the application of funding formulas for face-to-face teaching difficult to apply to online learning.

Second, the room for manouevre in subsidized programs is less than in fully cost-recoverable programs.

Third, a great deal of online learning is not separate from face-to-face teaching. This makes the separation of funding policy between the two more difficult.

The jury is still out on whether online learning is more or less expensive than face-to-face teaching . The methods for costing both face-to-face teaching and online learning are by no means clear or agreed.

However, there is enough evidence (see for instance, Bartolic and Bates, 1999, and Whalen and Wright, 2000) to suggest that the costs for online learning are different from those for face-to-face teaching. In particular , the ratio between direct and indirect costs seem to vary considerably between the two forms of teaching. More research and better costing methodologies that take into account direct and indirect costs are needed.

Nevertheless, because of the limited room for manouevre in the funding of subsidized programs, because of the known costs of start-up, and because of the need to develop sustainable forms of online learning, funding strategies specifically to support online learning need to be developed. Without specific actions to provide funding for online learning, it is likely to remain a cottage industry, dependent on the good will and extra work of faculty and instructors.

There are also clearly major opportunities for the development of fully cost-recoverable online programs. This allows for new markets to be opened, and in particular the lifelong learning market. Governments may need to look at how they regulate investment and borrowing in public institutions, to encourage a more entrepreneurial approach to online learning.

Lastly, it is probably unwise to underestimate the risks in entrepreneurial approaches to online learning. The market is increasingly competitive. Many areas of public higher education are unlikely to be able to cover their costs, either through online learning or face-to-face teaching, at least while student tuition is regulated.

In those areas such as lifelong learning and continuing professional education, where there are opportunities for at least cost-recovery, competition from both the public sector and private sector organizations is likely to be strong and hence margins low. The ability to recover costs and make profits will depend, as in all markets, on price, quality of service, and value to the client. This is likely to depend just as much on effective and high quality online design, and strong financial strategies, as on outstanding academic content.. Appropriate funding strategies then are likely to be critical for success.

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